



## Species of Concern

NOAA National Marine Fisheries Service

## Nassau grouper

*Epinephelus striatus*



Photo credit: Stephania Bolden, NMFS.

### KEY INFORMATION

#### Areas of Concern

Western Atlantic: south Atlantic and Caribbean.

**Year Identified as "Species of Concern"**  
1991

#### Factors for Decline

- Fishing

#### Conservation Designations

IUCN: Endangered

American Fisheries Society: Threatened

### Brief Species Description:

The Nassau grouper is a top-level predator found from inshore to about 330 feet (100 m). Adults are generally found near shallow high-relief coral reefs and rocky bottoms to a depth of at least 300 feet (90 m); juveniles (25-150 mm TL) have been found in and around coral clumps covered with macroalgae (*Laurencia* spp.) and over seagrass beds. Nassau grouper are characterized by five dark brown vertical bars on a pale tan or gray body, black dots around the eye, a large black saddle-blotch on the caudal peduncle and a wide "tuning-fork" pattern on their forehead. However they can greatly lighten or darken this overall pattern within minutes. They reach a maximum size of about 39 inches (100 cm) TL and 55 pounds (25 kg). They are late-maturing (between 4-7 years) and fairly long-lived (up to 29 years). Unlike most groupers, Nassau groupers are primarily gonochoristic (separate sexes); however protogynous hermaphroditism (female to male sex change) has not been disproved. Nassau grouper are known to assemble in very large numbers (a few dozen to 100,000 individuals) at transient, site-specific areas each year to spawn, presumably cued by temperature and moon (new) phase. Aside from the spawning season, Nassau grouper are solitary, diurnal fish. They are ambush suction foragers: they lie and wait for prey and then engulf the organism in a current of water by opening their mouth and quickly expanding their gill covers. Often found near caves or large overhangs. Their diet is mostly fishes and crabs.

### Rationale for "Species of Concern" Listing:

#### **Demographic and Genetic Diversity Concerns:**

Although Nassau grouper are abundant in the Bahamas (they are the most important finfish landed there, second only to lobster and conch), the Florida and Caribbean populations are considered "[overfished](#)" by NMFS. The Florida population is likely a separate [stock](#). High levels of fishing throughout the 20<sup>th</sup> century led to the commercial extinction of the species in the U.S. Caribbean by the mid-1980s. Florida populations declined between the 1950's to reach very low levels in the early 1990s (Sadovy and Eklund 1999). There is some indication that spawning sites are quite specific and that their destruction or disturbance could negatively impact spawning activity of population(s) that use such sites. In this respect, species like the Nassau grouper, which may depend for their reproduction on highly specific spawning areas, could be severely habitat-restricted with the



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spawning sites forming significant bottlenecks in their life cycle. The loss of local stocks following the elimination of local spawning aggregations in a number of insular areas (e.g., Bermuda and Puerto Rico) suggests that some populations are partially self-recruiting, although further genetic studies are necessary to test this hypothesis. Their late age of maturation is a concern for conservation.

### **Factors for Decline:**

Because of their reproductive strategy (aggregate spawners in site-specific areas), Nassau grouper spawning aggregations throughout the Caribbean are often targeted by fishers where many individuals, in reproductive condition, are removed. Anecdotal information indicates that some Nassau grouper spawning aggregations in the Caribbean have been severely reduced in number; however, recent tag returns from sites previously unknown indicate additional aggregation areas. This fishing pressure is not occurring in the U.S., as it is illegal to possess a Nassau grouper in the U.S., and there is no record of any Nassau grouper spawning aggregations in either the Gulf of Mexico Fishery Management Council or South Atlantic Fishery Management Council jurisdictional waters. Illegal and unreported fishing may be a problem. Hence, conservation efforts in the U.S. would likely benefit the Florida populations as they are probably a separate stock and mixing is unlikely.

Commercial and recreational landings data from 1986-91 indicate that the Nassau grouper harvest decreased in both pounds landed and average size. As a result of this decrease in yield, the Caribbean (1990), South Atlantic (1991), and the Gulf of Mexico (1996) Fishery Management Councils (FMC), and the State of Florida (1993) prohibited take and possession of Nassau grouper; all three FMCs currently classify them as overfished.

### **Status Reviews/Research Underway:**

Sadovy and Eklund (1999) is the most complete status review of the species.

### **Data Deficiencies:**

Their habits, numbers, and life history characteristics in US waters are poorly understood because of their depressed numbers there.

### **Existing Protections and Conservation Actions:**

Fishing is prohibited throughout the US for Nassau grouper.

### **For Further Information:**

[http://www.oar.noaa.gov/spotlite/archive/spot\\_spawn.html](http://www.oar.noaa.gov/spotlite/archive/spot_spawn.html)

<http://www.flmnh.ufl.edu/fish/Gallery/Descript/NassauGrouper/NassauGrouper.html>

<http://www.reef.org/data/groupermoon.html>

### **References:**

Bolden, S.K. 2000. Long-distance movement of a Nassau grouper (*Epinephelus striatus*) to a spawning aggregation in the central Bahamas. Fishery Bulletin (U.S.) 98:642-645.

Eggleston, D.B. 1995. Recruitment in Nassau grouper *Epinephelus striatus*: post-settlement abundance, microhabitat features and ontogenetic habitat shifts. Marine Ecology Progress Series 124:9-22.



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Sadovy, Y.J. and P.L. Colin. 1995. Sexual development and sexuality in the Nassau grouper. *Journal of Fish Biology* 46:961-976.

Sadovy, Y.J., and A.M. Eklund. 1999. Synopsis of biological information on *Epinephelus striatus* (Bloch 1792), the Nassau grouper and *E. itajara* (Lichtenstein, 1822) the jewfish. NOAA-NMFS Technical Report 146. 65 p. <http://spo.nwr.noaa.gov/tr146.pdf>

Smith, C.L. 1972. A spawning aggregation of Nassau grouper, *Epinephelus striatus* (Bloch). *Transactions of the American Fisheries Society* 2:257-261.

### **Point(s) of contact for questions or further information:**

For further information on this Species of Concern, or on the Species of Concern Program in general, please contact NMFS, Office of Protected Resources, 1315 East West Highway, Silver Spring, MD 20910, (301) 713-1401, [soc.list@noaa.gov](mailto:soc.list@noaa.gov); or <http://www.nmfs.noaa.gov/pr/species/concern/>, Dr. Stephania Bolden, NMFS, Southeast Region, Protected Resources Division, 9721 Executive Center Drive N., St. Petersburg, FL 33702, (727)570-5312, [Stephania.Bolden@noaa.gov](mailto:Stephania.Bolden@noaa.gov).